

Post-assessment—Rational Functions
NO CALCULATORS!!!!

Name: _____ Period: _____

TRUE OR FALSE:

_____ 1. A graph can never cross a vertical asymptote. However, a graph CAN cross a horizontal asymptote, but at the center of the graph only.

Simplify the rational expressions. CIRCLE YOUR ANSWER!

2. $\frac{x^2 - 4x - 5}{x^2 - 3x + 2} \cdot \frac{x^2 - 4}{x^2 - 3x - 10} =$

3. $\frac{x^2 + 5x + 6}{x^2 - x - 20} \cdot \frac{x - 5}{x^2 + x - 2} =$

4. $\frac{x^2 - 9}{x^2 - 4x + 4} \div \frac{x^2 - x - 6}{x^2 - 4} =$

5. $\frac{x^2 - 4}{2x + 5} \div \frac{x - 2}{2x^2 - x - 15} =$

6. $\frac{\frac{x-3}{x+2}}{\frac{x^3}{x-1}} =$

7. $\frac{3}{x-1} - \frac{2}{x+1} =$

8. $\frac{x}{x-2} + \frac{-8}{x^2-4} =$

9. $\frac{4x}{x^2+2x-3} - \frac{x+5}{x^2+5x+6} =$

Find the domain of the rational functions:

10. $f(x) = \frac{x+2}{x+3}$

Domain=

11. $g(x) = \frac{(x+3)(x-1)}{(x-5)(x+1)}$

Domain=

Find the location of the vertical asymptotes and holes in the rational functions:

12. $f(x) = \frac{x^2 - 4x - 5}{x^2 + 4x + 3}$

vertical asymptote(s) at _____
hole(s) at _____

13. $h(x) = \frac{(x^2 - 4)(x + 1)}{(x + 2)(x^2 - 4x - 5)}$

vertical asymptote(s) at _____
hole(s) at _____

Find the location of the horizontal asymptote of the rational functions:

14. $g(x) = \frac{5x+4}{x-3}$

horizontal asymptote at _____

15. $f(x) = \frac{2x+1}{x^2-3}$

horizontal asymptote at _____

Write the letter next to the word that fits the definition:

16. Rational function: _____

17. Horizontal asymptote: _____

18. Domain of a function: _____

19. Vertical asymptote: _____

20. Range of a function: _____

21. Polynomial: _____

- a. A monomial or sum of monomials
- b. Any function that has a radical in it
- c. Is found by checking the degree of the numerator and the denominator
- d. The y-values of a function
- e. A many-sided figure
- f. A vertical line the graph approaches, but never crosses
- g. The x-values of a function
- h. Where chickens roam
- i. A ratio of two polynomials
- j. Also called an oblique asymptote

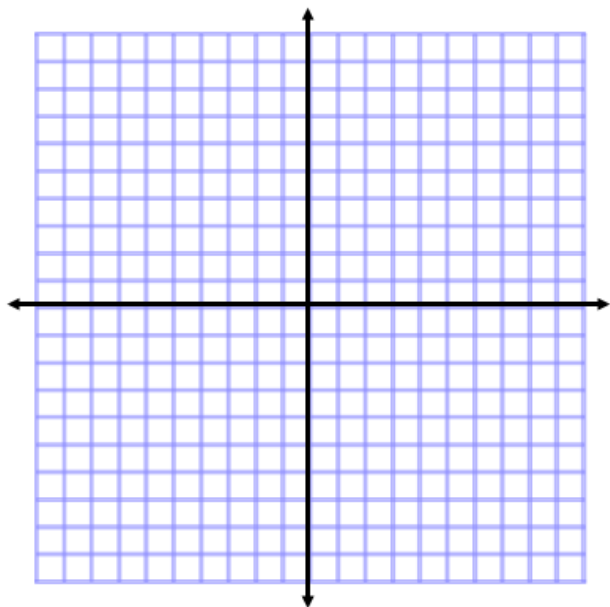
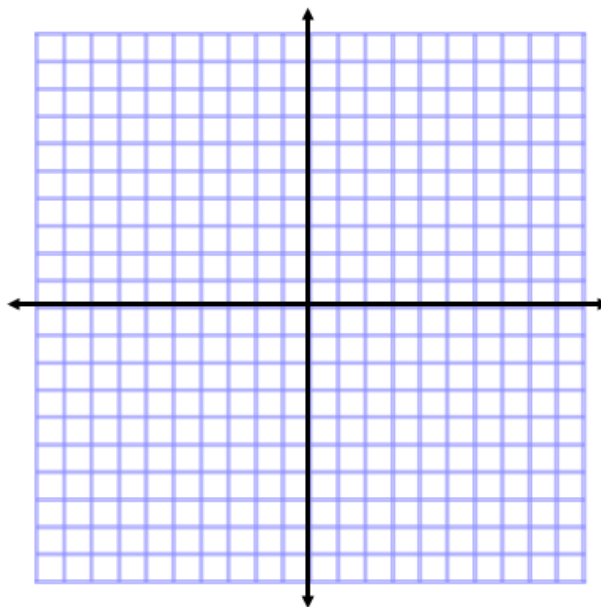
TRUE OR FALSE:

_____ 22. A function can have both a horizontal asymptote and a vertical asymptote.

_____ 23. A function can have at most one hole, one vertical asymptote, and one horizontal asymptote.

Graph the following rational functions by hand. Label all important parts.

24. $f(x) = \frac{x}{x+1}$



25. $h(x) = \frac{(x+1)(x-2)}{(x+1)(x+3)(x-5)}$